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Yes We Can: Pearl Harbor Shipyard In-Place Shaft Machining Capability Avoids Chicago Dry-Docking

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Pearl Harbor Naval Shipyard Public Affairs

PEARL HARBOR, Hawaii – For the first time independently, Pearl Harbor Naval Shipyard workers used a new tool to make repairs to the propulsion shaft on USS *Chicago* (SSN 721) late last year without having to dry-dock the submarine.

According to Clifford Imamura, Main Propulsion Branch head in the Engineering and Planning Department, Pearl Harbor Naval Shipyard (PHNSY) has had this capability for over a year now, but this was the first job that the PHNSY team performed on its own.

"The portable tool allows us to cut the shaft … on board the ship," said Imamura.

Imamura credited Randy Wilbur from Portsmouth Naval Shipyard (PNS) for his role in giving PHNSY this capability. Describing him as a "multi-talented" lead engineer and lead machinist, Imamura said Wilbur developed the process for using the portable cutting tool to repair shafts.

Wilbur then trained the PHNSY team on a dummy shaft in the shop as well as on actual repairs aboard a submarine. The job on *Chicago* was the first that PHNSY completed on time

under the supervision of marine machinery mechanic foreman Peter Akim and his mechanics. *Chicago* is scheduled to enter dry dock at PHNSY later this year for an overhaul.

Imamura said that Project Engineering and Planning Manager Henry Matsuoka also contributed to the success of the project because he had the foresight to purchase this equipment. Priced at over $120,000, the tool isn't low in cost, but has already paid for itself in savings.

Previously, only PNS had this in-place machining capability. Imamura said that for a submarine undergoing short-term repairs, the one week or more time it takes to fly the PNS team to Pearl Harbor was much too long.

"We used to have to pay approximately $100,000 to fly them over and do the machining," said Imamura. "It was very expensive and very time-consuming."

Lead Engineer Warren Taylor said that only a few mechanics were trained and are qualified to use the precision instrument. "It is very high-risk work. You only get one shot at this," he said.

Taylor said the tool is rather large and has to be carried out from storage by a crane when needed for a job.

Imamura explained that main propulsion shaft seals keep water out of the submarine. Over time, wear and tear from being in salt water can cause the seals to break down, allowing excessive water to seep in.

He said that without this portable tool, the boat would have to be dry-docked, and the shaft removed and either replaced or repaired.

"We pioneered waterborne replacement of propeller bearings, and in-place machining of the propulsion shaft is our latest advance in our capabilities," said Imamura. "The Shipyard will now be able to support this type of repairs in Guam and the entire Pacific region."

Pearl Harbor Naval Shipyard is the largest industrial employer in the state of Hawaii with a combined civilian and military workforce of about 4,700. It has an operating budget of $620 million, of which more than $390 million is payroll for civilian employees. The Shipyard, strategically located in the Pacific Ocean, is a full-service naval shipyard and regional maintenance center for the U.S. Navy's surface ships and submarines.

For more information on Pearl Harbor Naval Shipyard, visit http://www.phnsy.navy.mil.

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